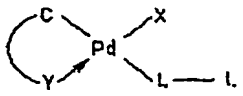
CLAIMS

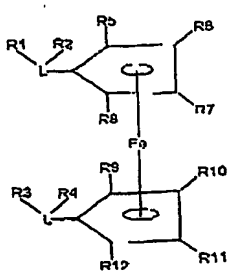
1. CYCLOPALLADATED COMPOUND, which is an organometallic compound comprising palladium, a Sigma C - Pd bond and a coordination bond Y → Pd, originating an organic cycle with formula corresponding to the structures below:



in which:

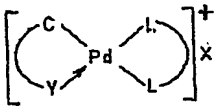
- X represents an element chosen from the following groups: halogen (Cl, F, Br, I); pseudo-halogen (N_3, NCO, NCS, SCN); or acetate (H_3C-COO^-); and
- Y represents an element from the group V or VI of the Periodic Table, e. g. N, P, As, Sb, Bi, O, S, Se, Te;
- C represents an atom of carbon with sp^2 or sp^3 hybridization, covalently bonded to the atom of palladium; the ring containing C, Y and D can be constituted of three to eight atoms;
- between C and Y, represented by a curved line, there is a succession of atoms designated as cyclopalladated ring, constituted of three to eight atoms, including the atom of palladium; typically, not excluding any other way, said atoms are chosen from carbon, nitrogen, oxygen or sulphur; each one of these atoms constituting the ring can, on the other hand, be linked to other atoms or groupings, forming variable structures external to the ring, linear or cyclic, for which no specific limitations are known by the Applicant;
- L represents a coordinated ligand which is a donating atom from group V of the Periodic Table (N, P, As, Sb, Bi) within a bis-diphenylphosphine-ferrocene compound as detailed by Scheme 2 below, with the schematic representation L-L indicating the presence of two linkers L within the structure of said bis-diphenylphosphine-ferrocene compound, while R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11 and R12 represent individually the following radicals, which can be present in any order: hydrogen (H), alkyl, aryl, dienyl, alkoxy, siloxy, hydroxy (OH), amine (-NH2), imide, halogen (F, Cl, Br, I), imine, nitro (-NO2);

SCHEME 2



or one of its pharmaceutically acceptable salts or adducts.

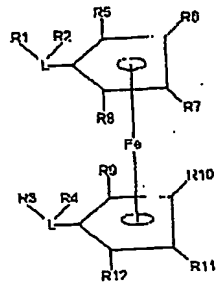
2. CYCLOPALLADATED COMPOUND, which is an organometallic compound comprising palladium, a Sigma C - Pd bond and a coordination bond Y → Pd, originating an organic cycle with formula corresponding to the structure below:



in which:

- X represents an element chosen from the following groups: halogen (Cl, F, Br, I);pseudo-halogen (N_3, NCO, NCS, SCN); or acetate (H_3C-COO^-); and
- Y represents a Nitrogen (N) atom of any isomer of the ligand N,N-dimethyl-1-phenethylamine (triethylamine) or of the alkynes pyridinyl-phenyl-ethyne or 1-phenyl-3-N,N-dimethylamine-propyne showed in the schemes 4A and 4B.
- C represents an atom of carbon in *ortho* position of the aromatic ring of the ligand N,N-dimethyl-1-phenethylamine (triethylamine) with sp^2 hybridization and covalently bonded to the atom of palladium. C represents yet a carbon atom of the ligands pyridinyl-phenyl-ethyne or 1-phenyl-3-N,N-dimethylamine-propyne show and marked in schemes 4A or 4B.
- L represents a coordinated ligand which is a donating atom from group V of the Periodic Table (N, P, As, Sb, Bi) within a bis-diphenylphosphine-ferrocene compound as detailed by Scheme 2 below, with the schematic representation L-L indicating the presence of two linkers L within the structure of said bis-diphenylphosphine-ferrocene compound, while R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11 and R12 represent individually the following radicals, which can be present in any order: hydrogen (H), alkyl, aryl, dienyl, alkoxy, siloxy, hydroxy (OH), amine (-NH2), Imide, halogen (F, Cl, Br, I), imine, nitro (-NO2);

SCHEME 2



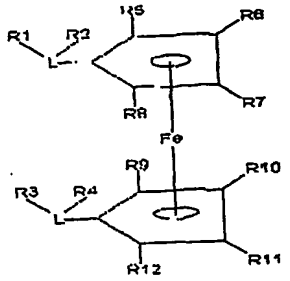
or one of its pharmaceutically acceptable salts or adducts.

3. CYCLOPALLADATED COMPOUND, which is an organometallic compound comprising palladium, a Sigma C - Pd bond and a coordination bond Y → Pd, originating an organic cycle with formula corresponding to the structures below:

in which:

- X represents an element chosen from the following groups: halogen (Cl, F, Br, I);pseudo-halogen (N_3, NCO, NCS, SCN); or acetate (H_3C-COO^-); and
- Y represents a Nitrogen (N) atom of any isomer of the ligand N,N-dimethyl-1-phenethylamine (triethylamine) or of the alkynes pyridinyl-phenyl-ethyne or 1-phenyl-3-N,N-dimethylamine-propine showed in the schemes 4A and 4B.
- C represents an atom of carbon in *ortho* position of the aromatic ring of the ligand N,N-dimethyl-1-phenethylamine (triethylamine) with sp^2 hybridization and covalently bonded to the atom of palladium. C represents yet a carbon atom of the ligands pyridinyl-phenyl-ethyne or 1-phenyl-3-N,N-dimethylamine-propyne show and marked in schemes 4A or 4B.
- L represents a coordinated ligand which is a donating atom from group V of the Periodic Table (N, P, As, Sb, Bi) within a bis-diphenylphosphine-ferrocene compound as detailed by Scheme 2 below, with the schematic representation L-L indicating the presence of two linkers L within the structure of said bis-diphenylphosphine-ferrocene compound, while R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11 and R12 represent individually the following radicals, which can be present in any order: hydrogen (H), alkyl, aryl, dienyl, alkoxy, siloxy, hydroxy (OH), amine (-NH2), imide, halogen (F, Cl, Br, I), imine, nitro (-NO2);

SCHEME 2



or one of its pharmaceutically acceptable salts or adducts.

4. CYCLOPALLADATED COMPOUND of any of claims 1 to 3, which is selected from the group comprising N,N-dimethyl-1-phenethylamine (dmpa) and derivatives of the alkynes pyridinyl-phenyl-ethyne or 1-phenyl-3-N,N-dimethylamine-propyne or one of its pharmaceutically acceptable salts or adducts, containing any other biphosphinic ligand.

5. COMPOUND of any of claims 1 to 4 which inhibits the activity of proteins linked to disorders or diseases.

6. COMPOUND of claim 5, in which the protein is an enzyme.

7. COMPOUND of claim 6, in which the enzyme comprises enzymes from the cysteine-protease, serine peptidase and metallo-protease families.

8. COMPOUND of claim 7, in which the cysteine-proteases comprise Cathepsins B, H, J, L, N, S, T and C (dipeptidyl-peptidase-I), Interleukine Converter Enzyme (ICE), neutral proteases activated by calcium, Calpaine I and II, endopeptidases, viral cysteine-proteases, such as cardiovirus endopeptidase, adenovirus endopeptidase and aphthovirus endopeptidase, and essential proteases for the life cycle of parasites such as proteases from *Plasmodium*, *Entamoebas*, *Onchoceras*, *Leishmanias*, *Haemonchus*, *Dictyostellum*, *Therilerium*, *Schistosoma* and *Tripanosoma* species.

9. COMPOUND of claim 8, in which the enzyme is Cahtepsin B, Cruzaine and Interleukine-1β Converter Enzyme.

10. COMPOUND of claim 7, in which serino-peptidases comprise dipeptidyl-peptidase IV, acylaminacyl-peptidase and oligopeptidase B prolyl-oligopeptidase and Cathepsin D.

11. COMPOUND of claim 10, in which the enzyme is Cathepsin D.

12. COMPOUND of claim 7, in which metallo-proteases comprise angiotensin converting enzyme, collagenases, stromelisines, membrane type metallo-protease and genatinases.

13. COMPOUND of any of claims 1 to 3, which is intended to treat disorders and diseases linked to proteins and enzymes.

14. COMPOUND of claim 13, in which the diseases comprise diseases caused by tissue degradation such as arthritis, muscle distrophy, tumor invasion, glomerulonephrithis, bone infections by parasites, parasitomies, periodontal diseases and tumor metastasis; heart diseases involving the degradation of atrial natriuretic factor; inflammatory diseases, such as e. g. bronchitis, arthritis rheumatoid, osteoporosis, acute pancreatitis and cancer progressions; disorders such as amnesia, control of depression and blood pressure; diabetes, trypanosomiasis, Chagas disease, food disorders, bullimia nervosa and anorexia; alcoholism, diseases related to the production of cytokines and

cytokine receptors, such as interleukine-6 (IL-6), tumor necrosis factor alpha (TNF-alpha), interferon-gamma (INFN-gamma), IL-1 antatonist receptor (IL-1 RA), IL-10 and growth stimulation factor for granulocyte-macrophage colonies (GM-CSF), psychological stress, combat against infections caused by HIV virus (AIDS); inflammatory diseases of the Central Nervous System causing mieline degradation, including Multiple Sclerosis and autoimmune Encephalomielitis; cancer tumors, autoimmune diseases, tumors comprising breast, marrow, adenomas, thyroid, melanoma, gastric, bowel, gullet and thyroid tumors and neuroblastomas.

15. COMPOUND of claim 14 in which the diseases are ascitic or solid tumors, particularly breast, marrow, adenomas, thyroid, gastric, bowel, gullet, thyroid tumors and neuroblastomas.

16. COMPOUND of any of claims 1 to 5, which inhibits young bone marrow cells from entering cell division (S stage).

17. COMPOUND of any of claims 1 to 5, which is antiangiogenic.

18. COMPOUND of any of claims 1 to 5, which is antimetastatic.

19. COMPOUND of any of claims 1 to 5, which is useful to complement radio therapy treatments.

20. COMPOUND of claim 1, which interacts with the DNA.

21. COMPOUND of claim 1, which is an immunomodulator.

22. COMPOSITION comprising at least one compound of any of claims 1 to 21 or one of its pharmaceutically acceptable salts or adducts.

23. COMPOSITION of claim 22, which comprises about 0.001 to 99% of the full weight of the composition of the compound or one of its salts or adducts, and at least one pharmaceutically acceptable carrier.

24. COMPOSITION of claim 22, which comprises about 0.01 to 70% of the full weight of the composition of the compound or one of its salts or adducts, and at least one pharmaceutically acceptable carrier.

25. COMPOSITION of claim 22, which comprises about 0.1 to 40% of the full weight of the composition of the compound or one of its salts or adducts, and at least one pharmaceutically acceptable carrier.

26. COMPOSITION of claim 22, which additionally comprises a solvent.

27. COMPOSITION of claim 26, in which the solvent is DMSO.

28. COMPOSITION of claim 22, which is presented in solid dosage forms, such as capsules, tablets or powders, or in liquid dosage forms, such as elixirs, syrups, emulsions, solutions, suspensions, mixtures and infusions.

29. COMPOSITION of claim 28, in which the formulations are scheduled

or delayed release.

30. COMPOSITION of claim 28, in which its administration is made by means comprising oral, subcutaneous, intravenous, intranasal, transdermal, intraperitoneal, topic, intramuscular, intralung, vaginal, rectal, intraocular or sublingual means, systems to supply liposomes.

31. COMPOSITION of claim 30, in which its administration is made by injectable means, particularly intraperitoneal.

32. COMPOSITION of claim 31 which comprises particularly water, saline solution and/or phosphate buffer pH 7.4 and between 0.1 and 30% DMSO, more particularly 1 to 10% by weight of the composition and stabilizing or preservative agents, if required.

33. COMPOSITION of claim 22, comprising about 0.0001 to 250 mg, more particularly about 0.1 to 100 mg of at least one compound of claims 1 to 22 or one of its pharmaceutically acceptable salts or adducts.

34. COMPOSITION of claim 22, which inhibits the activity of proteins linked to disturbances or diseases.

35. COMPOSITION of claim 34, in which the protein is an enzyme.

36. COMPOSITION of claim 35, in which the enzyme comprises enzymes from the cysteine-protease, serine peptidase and metallo-protease families.

37. COMPOSITION of claim 36, in which the cysteine-proteases comprise Cathepsins B, H, J, L, N, S, T and C (dipeptidyl-peptidase-I), Interleukine Converter Enzyme (ICE), neutral proteases activated by calcium, Calpaine I and II, viral cysteine-proteases, such as cardiovirus endopeptidase, adenovirus endopeptidase and aphthovirus endopeptidase, and essential proteases for the life cycle of parasites such as proteases from *Plasmodium*, *Entamoebas*, *Onchoceras*, *Leishmanias*, *Haemonchus*, *Dictyostelium*, *Therilerium*, *Schistosoma* and *Tripanosoma* species.

38. COMPOSITION of claim 37, in which the enzyme is Cathepsin B, Cruzaine and Interleukine-1β Converter Enzyme.

39. COMPOSITION of claim 36, in which serine peptidases comprise dipeptidyl-peptidase IV, acylaminacyl-peptidase, oligopeptidase B and prolyl-oligopeptidase.

40. COMPOSITION of claim 36, in which the enzyme is Cathepsin D.

41. COMPOSITION of claim 36, in which metallo-proteases comprise angiotensin converting enzyme, collagenases, stromelisines, membrane type metallo-protease and genatinases.

42. COMPOSITION of claim 36, which may be useful for the treatment

of disorders and diseases linked to proteins and enzymes.

43. COMPOSITION of claim 42, in which the diseases comprise diseases caused by tissue degradation such as arthritis, muscle distrophy, tumor invasion, glomerulonephrithis, bone infections by parasites, parasitomies, periodontal diseases and tumor metastasis; heart diseases involving the degradation of atrial natriuretic factor; inflammatory diseases, such as e. g. bronchitis, arthritis rheumatoid, osteoporosis, acute pancreatitis and cancer progressions; disorders such as amnesia, control of depression and blood pressure; diabetes, trypanosomiasis, Chagas disease, food disorders, bullimia nervosa and anorexia; alcoholism, diseases related to the production of cytokines and cytokine receptors, such as interleukine-6 (IL-6), tumor necrosis factor alpha (TNF-alpha), interferon-gamma (INFN-gamma), IL-1 antatonist receptor (IL-1 RA), IL-10 and growth stimulation factor for granulocyte-macrophage colonies (GM-CSF), psychological stress, combat against infections caused by HIV virus (AIDS); inflammatory diseases of the Central Nervous System causing mieline degradation, including Multiple Sclerosis and autoimmune Encephalomielitis; cancer tumors, autoimmune diseases, tumors comprising breast, marrow, adenomas, thyroid, melanoma, gastric, bowel, gullet, thyroid tumors and neuroblastomas.

44. COMPOSITION of claim 43, in which the diseases are ascitic or solid tumors, particularly breast, marrow, adenomas, thyroid, melanoma, gastric, bowel, gullet, thyroid tumors and neuroblastomas.

45. COMPOSITION of any of claims 22 to 36, which inhibits young bone marrow cells from entering cell division (S stage).

46. COMPOSITION of any of claims 22 to 36, which is antianglogenic.

47. COMPOSITION of any of claims 22 to 36, which is antimetastatic.

48. COMPOSITION of any of claims 22 to 36, which is useful to complement radio therapy treatments.

49. COMPOSITION of claim 22, which interacts with the DNA.

50. COMPOSITION of claim 22, which is immunomodulator.

51. COMPOSITION of any of claims 22 to 36, which comprises the total volume of blood of the recipient and active agent under concentration of about 0.01 to 200 μM, particularly 0.1 to 50 μM, more particularly between 10 and 25 μM.

52. DOSAGE UNIT comprising at least one compound of any of claims 1 to 21 or one of its pharmaceutically acceptable salts or adducts.

53. DOSAGE UNIT comprising at least one composition of any of claims 22 to 51.

54. DOSAGE UNIT of any of claims 52 or 53, in which the quantity of

compound or composition is enough to take the concentration from about to 0.01 to 200 μM, particularly 0.1 to 50 μM, more particularly from 10 to 25 μM of the active ingredient in the total volume of blood of the recipient.

55. DOSAGE UNIT of any of claims 52 to 54, which comprises solid and liquid forms.

56. DOSAGE UNIT of claim 55, which comprises dosage forms, such as capsules, tablets and powders, or in elixirs, syrups, emulsions, solutions, suspensions, mixtures and infusions.

57. DOSAGE UNIT of claim 52, in which the formulations are scheduled or delayed release.

58. DOSAGE UNIT of claim 52, which comprises at least one covering layer.

59. METHOD TO INHIBIT THE ACTIVITY OF PROTEINS linked to disorders or diseases, which comprises the administration of an efficient quantity of a compound of any of claims 1 to 21, a composition of any of claims 22 to 51 or a dosage unit of any of claims 52 to 58.

60. METHOD of claim 59, in which the protein is an enzyme.

61. METHOD TO TREAT DISORDERS AND DISEASES, which comprises the administration of an efficient quantity of a compound of any of claims 1 to 21, a composition of any of claims 22 to 51 or a dosage unit of any of claims 52 to 58.

62. METHOD FOR TREATMENT of claim 61, which may be intended to disorders and diseases linked to protein or enzyme activity.

63. METHOD of claim 59 or 61, in which the enzyme comprises the enzymes of the cysteine-protease, serine peptidase and metallo-protease families.

64. METHOD of claim 63, in which the cysteine-proteases comprise Cathepsins B, H, J, L, N, S, T and C (dipeptidyl-peptidase-I), Interleukine Converter Enzyme (ICE), neutral proteases activated by calcium, Calpaine I and II, viral cysteine-proteases, such as cardiovirus endopeptidase, adenovirus endopeptidase and aphthovirus endopeptidase, and essential proteases for the life cycle of parasites such as proteases from *Plasmodium*, *Entamoebas*, *Onchoceras*, *Leishmanias*, *Haemonchus*, *Dictyostellum*, *Therilerium*, *Schistosoma* and *Tripanosoma* species.

65. METHOD of claim 64, in which the enzyme is Cathepsin B, Cruzaine and Interleukine-1β Converter Enzyme.

66. METHOD of claim 63, in which the serine peptidases comprise dipeptidyl-peptidase IV, acylaminacyl-peptidase, oligopeptidase B and prolyl-oligopeptidase.

67. METHOD of claim 66, in which the enzyme is Cathepsin D.

68. METHOD of claim 63, in which the metallo-proteases comprise angiotensin converting enzyme, collagenases, stromelisines, membrane-type metallo-protease and genatinases.

69. METHOD of claim 62, in which the diseases comprise diseases caused by tissue degradation such as arthritis, muscle distrophy, tumor invasion, glomerulonephrithis, bone infections by parasites, parasitomies, periodontal diseases and tumor metastasis; heart diseases involving the degradation of atrial natriuretic factor; inflammatory diseases, such as e. g. bronchitis, arthritis rheumatoid, osteoporosis, acute pancreatitis and cancer progressions; disorders such as amnesia, control of depression and blood pressure; diabetes, trypanosomiasis, Chagas disease, food disorders, bullimia nervosa and anorexia; alcoholism, diseases related to the production of cytokines and cytokine receptors, such as interleukine-6 (IL-6), tumor necrosis factor alpha (TNF-alpha), interferon-gamma (INFN-gamma), IL-1 antatonist receptor (IL-1 RA), IL-10 and growth stimulation factor for granulocyte-macrophage colonies (GM-CSF), psychological stress, combat against infections caused by HIV virus (AIDS); inflammatory diseases of the Central Nervous System causing mieline degradation, including Multiple Sclerosis and autoimmune Encephalomielitis; cancer tumors, autoimmune diseases, tumors comprising breast, marrow, adenomas, thyroid, melanoma, gastric, bowel, gullet, thyroid tumors and neuroblastomas.

70. METHOD of claim 69, in which the diseases are ascitic or solid tumors, particularly breast, marrow, adenomas, thyroid, melanoma, gastric, bowel, gullet, thyroid tumors and neuroblastomas.

71. METHOD of any of claims 59 to 62, which inhibits young bone marrow cells from entering cell division (S stage).

72. METHOD of any of claims 59 to 62, which is antiangiogenic.

73. METHOD of any of claims 59 to 62, which is antimetastatic.

74. METHOD of any of claims 59 to 62, which is useful to complement radio therapy treatments.

75. METHOD of any of claims 59 to 62, which comprises the administration of active ingredient between about 0.0001 to about 500 mg/kg of body weight, with the particular dose being about 0.0001 to 100 mg/kg and, more particularly, between 0.0001 and about 30 mg/kg.

76. METHOD of any of claims 59 to 62, which comprises the administration of enough active ingredient to take the concentration from about 0.01 to 200 μM, particularly 0.1 to 50 μM, more particularly from 10 to 25 μM of the active ingredient in

the total volume of blood of the recipient.

77. METHOD of any of claims 59 to 62, in which the administration is made by means of dosage units of any of claims 52 to 58.

78. METHOD of any of claims 59 to 62, in which the administration is continuous, non continuous or cyclic.

79. METHOD TO MODULATE THE IMMUNOLOGICAL SYSTEM, which comprises the administration of an efficient quantity of a compound of any of claims 1 to 21, a composition of any of claims 22 to 51 or a dosage unit of any of claims 52 to 58.

80. USE OF THE COMPOUND of any of claims 1 to 21 for the preparation of a composition.

81. USE of claim 80 for the manufacture of a medicine to inhibit the activity of proteins and enzymes.

82. USE OF A COMPOSITION of any of claims 22 to 51 for the preparation of a medicine to inhibit the activity of proteins and enzymes.

83. USE of any of claims 80 to 82, in which the enzyme comprises the enzymes from the cysteine-protease, serine peptidase and metallo-protease families.

84. USE of claim 83, in which the enzymes comprise Cathepsins B, H, J, L, N, S, T and C (dipeptidyl-peptidase-I), Interleukine Converter Enzyme (ICE), neutral proteases activated by calcium, Calpaine I and II, endopeptidases, viral cysteine-proteases, such as cardiovirus endopeptidase, adenovirus endopeptidase and aphthovirus endopeptidase, and essential proteases for the life cycle of parasites such as proteases from *Plasmodium*, *Entamoebas*, *Onchoceras*, *Leishmanias*, *Haemonchus*, *Dictyostelium*, *Therilerium*, *Schistosoma* and *Tripanosoma* species; Cathepsin D or Encephalinase, dipeptidyl-peptidase IV, acylaminacyl-peptidase and oligopeptidase B and prolyl-oligopeptidase; angiotensin converting enzyme, collagenases, stromelisines, membrane type metallo-protease and genatinases.

85. USE of claim 82, in which the diseases comprise diseases caused by tissue degradation such as arthritis, muscle distrophy, tumor invasion, glomerulonephrithis, bone infections by parasites, parasitomies, periodontal diseases and tumor metastasis; heart diseases involving the degradation of atrial natriuretic factor; inflammatory diseases, such as e. g. bronchitis, arthritis rheumatoid, osteoporosis, acute pancreatitis and cancer progressions; disorders such as amnesia, control of depression and blood pressure; diabetes, trypanosomiasis, Chagas disease, food disorders, bullimia nervosa and anorexia; alcoholism, diseases related to the production of cytokines and cytokine receptors, such as interleukine-6 (IL-6), tumor necrosis factor alpha (TNF-alpha), interferon-gamma (INFN-gamma), IL-1 antatonist receptor (IL-1 RA), IL-10 and growth

stimulation factor for granulocyte-macrophage colonies (GM-CSF), psychological stress, combat against infections caused by HIV virus (AIDS); inflammatory diseases of the Central Nervous System causing mieline degradation, including Multiple Sclerosis and autoimmune Encephalomielitis; cancer tumors, autoimmune diseases, tumors comprising ascitic or solid, breast, marrow, adenomas, thyroid, melanoma, gastric, bowel, gullet, thyroid tumors and neuroblastomas.

86. USE of any of claims 80 or 82 for the manufacture of a medicine to treat disorders and diseases linked to the protein or enzyme activity.

87. USE of any of claims 80 or 82, which inhibits young bone marrow cells from entering cell division (S stage).

88. USE of any of claims 80 or 82, which is antiangiogenic.

89. USE of any of claims 80 or 82, which is antimetastatic.

90. USE of any of claims 80 or 82 to complement radio therapy treatments.

91. USE of any of claims 80 or 82, which interacts with the DNA.

92. USE of any of claims 80 or 82, which is immunomodulator.